

AMENDMENTS TO THE CLAIMS

Please amend claims 1 and 12-13 and cancel claim 2 as follows:

1. (currently amended) A method for manufacturing a contact plug of a semiconductor device, the method comprising:

forming a wordline pattern having a sequentially stacked structure of a wordline conductive material and a hard mask nitride film on a semiconductor substrate;

forming a nitride film spacer on a side of the wordline pattern;

forming a planarized interlayer insulating film on the wordline pattern;

etching the interlayer insulating film until the substrate is exposed, to form a contact hole;

forming a polysilicon layer on the surface of the interlayer insulating film where the contact hole is formed; and

performing a chemical mechanical polishing (CMP) process on the polysilicon layer and the interlayer insulating film until the hard mask nitride film is exposed using an acidic oxide film CMP slurry ~~for oxide~~ on the polysilicon layer and interlayer insulating film, the acidic oxide film CMP slurry having a pH ranging from 2 to 7 and containing an oxidizer selected from the group consisting of hydrogen peroxide (H₂O₂), periodic acid (H₂IO₆), ferric nitrate [Fe(N₃O₉), and combinations thereof until the hard mask nitride film is exposed.

2. (canceled)

3. (original) The method according to claim 1, wherein the oxidizer is present in an amount ranging from 1 to 40 vol% based on the CMP slurry.

4. (original) The method according to claim 1, wherein the oxidizer is present in an amount ranging from 20 to 30 vol% based on the CMP slurry.

5. (original) The method according to claim 1, wherein the acidic slurry has a pH ranging from 2 to 5.

6. (original) The method according to claim 1, wherein the acidic slurry comprises an abrasive selected from the group consisting of silica (SiO_2), ceria (CeO_2), zirconia (ZrO_2), alumina (Al_2O_3), and combinations thereof.

7. (original) The method according to claim 6, wherein the abrasive is present in an amount ranging from 10 to 50 wt% based on the CMP slurry.

8. (original) The method according to claim 7, wherein the abrasive is present in an amount ranging from 25 to 35 wt% based on the CMP slurry.

9. (original) The method according to claim 1, wherein the polysilicon layer is formed using one selected from the group consisting of P-doped amorphous silicon film, P-doped polysilicon film, P-doped epitaxial silicon film, and combinations thereof.

10. (original) The method according to claim 1, wherein the wordline conductive material is formed of a SiON or organic bottom ARC layer.

11. (original) The method according to claim 1, wherein the interlayer insulating film is formed of a BPSG (borophosphosilicate glass) or HDP (high density plasma) oxide film.

12. (currently amended) A method for manufacturing a contact plug of a semiconductor device, ~~comprises~~ the method comprising:

forming a wordline pattern having a sequentially stacked of a wordline conductive material and a hard mask nitride film on a semiconductor substrate;

forming a nitride film spacer on a side of the wordline pattern;

forming a planarized interlayer insulating film on the wordline pattern;

etching the interlayer insulating film until the substrate is exposed to form a contact hole;

forming a polysilicon layer on the surface of the interlayer insulating film where the contact hole is formed; and

performing a CMP process on the polysilicon layer and the interlayer insulating film using a an acidic oxide film CMP slurry on the polysilicon layer and for oxide the interlayer insulating film, the acidic oxide film CMP slurry having a pH ranging 2 to 7 containing H_2O_2 in an amount ranging from 1 to 40 vol%.

13. (currently amended) The method according to claim 12, wherein the oxidizer H_2O_2 is present in an amount ranging from 20 to 30 vol% based on the CMP slurry.

14. (original) The method according to claim 12, wherein the acidic slurry has a pH ranging from 2 to 5.

15. (original) The method according to claim 12, wherein the acidic slurry comprises an abrasive selected from the group consisting of silica (SiO_2), ceria (CeO_2), zirconia (ZrO_2), alumina (Al_2O_3), and combinations thereof.

16. (original) The method according to claim 15, wherein the abrasive is present in an amount ranging from 10 to 50 wt% based on the CMP slurry.

17. (original) The method according to claim 15, wherein the abrasive is present in an amount ranging from 25 to 35 wt% based on the CMP slurry.

18. (original) The method according to claim 12, wherein the polysilicon layer is formed using one selected from the group consisting of P-doped amorphous silicon film, P-doped polysilicon film, P-doped epitaxial silicon film, and combinations thereof.

19. (original) The method according to claim 12, wherein the wordline conductive material is formed of a SiON or organic bottom ARC layer.

20. (original) The method according to claim 12, wherein the interlayer insulating film is formed of a BPSG (borophosphosilicate glass) or HDP (high density plasma) oxide film.